



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,351	02/23/2005	Kenji Takeda	441/1/022	3918

170 7590 03/23/2007  
RICHARD M. GOLDBERG  
25 EAST SALEM STREET  
SUITE 419  
HACKENSACK, NJ 07601

EXAMINER
----------

MCCLENDON, SANZA L

ART UNIT	PAPER NUMBER
----------	--------------

1711

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/525,351

Applicant(s)

TAKEDA ET AL.

Examiner

Sanza L. McClendon.

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/05</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1711

DETAILED ACTION  
*Specification*

1. The disclosure is objected to because of the following informalities: In the specification, page 1, line 18, there appears to be a misspelled word-- "atension".

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 19 recites the broad recitations photosetting resin and thermosetting resin, and the claim also recites aromatic vinyl resin, acrylic resin, polyester, polycarbonate, polyurethane, polyamide, polysulfone, and polycyclopentadiene, which is the narrower statement of the range/limitation.

Art Unit: 1711

*Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

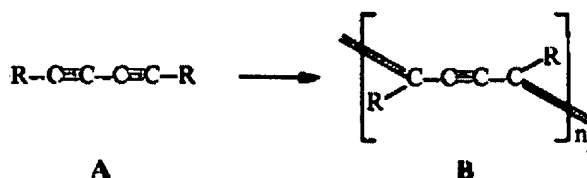
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

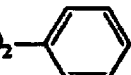
7. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Wenz et al (Makromol. Chem., Rapid Commun. 3, 231-237 (1982)).

Wenz et al teaches molecular weight distribution and solution properties of poly (diacetylene). Said Polydiacetylene polymers are obtained from monomers having general formula A and the polymer has the repeat units having the general formula B.



Wenz et al teaches polyacetylenes are known wherein the R groups have the general formula  $\text{R} = (\text{CH}_2)_3\text{O}-\text{CO}-\text{NHCH}_2-\text{CO}-\text{OC}_4\text{H}_9$ . The polyacetylene

Art Unit: 1711

described by Wenz et al is one wherein R is  $(\text{CH}_2)_4\text{OSO}_2$    $\text{CH}_3$  i --poly (TS-12). Poly (TS-12) is a soluble diacetylene polymer in polar solvents, like DMF, chloroform, THF, acetone and the like. Wenz et al teaches photodecomposing poly TS-12 by dissolving in a solvent and exposing to irradiation to obtain random chain scission. From table 1, Wenz et al shows a polydispersity of 1,470 and a Mw of 740,000 g/mol. The degraded poly TS-12 was evaluated for molecular weight to obtain the polydispersity of the irradiated sample. The polydispersity obtained by Wenz et al was Mw/Mn = 2. This appears to anticipate claim 13.

*Claim Rejections - 35 USC § 102/35 USC § 103*

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 13-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Leyrer et al (4,640,960).

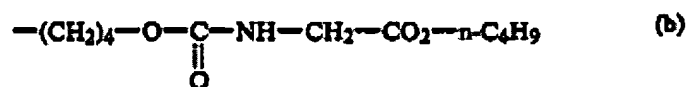
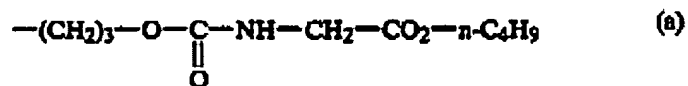
Leyrer et al teaches degradation of poly (diacetylenes) having selected molecular weights. Said degradation is carried out in solution or as solid or liquid layers in which the PDA is present as a homogenous mixture with

Art Unit: 1711

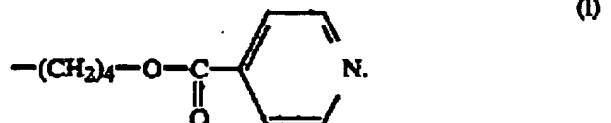
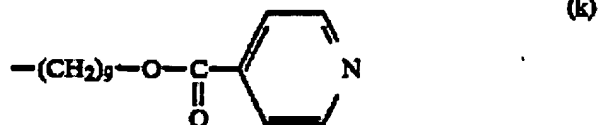
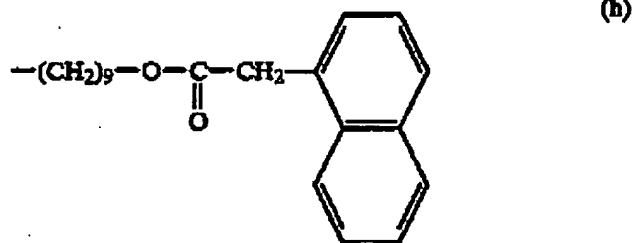
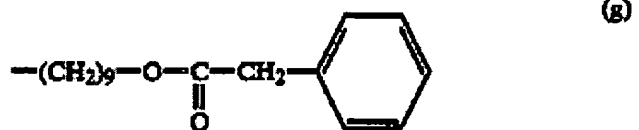
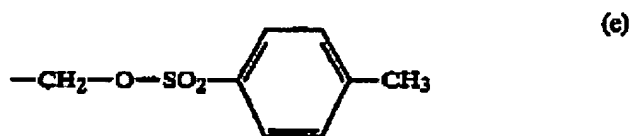
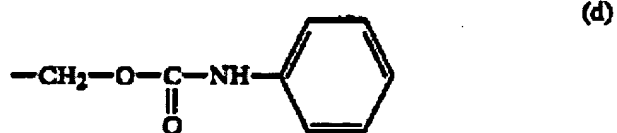
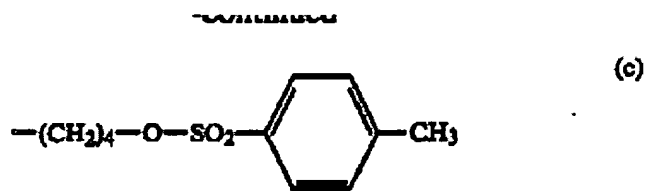
sensitizers or sensitizer systems which can be activated chemically, by heat and/or by activation with actinic light. Said PDA has the repeat units of general formula II:



, wherein R1 and R2 are represented by general formulas (a) - (1), wherein at least one of applicants instantly claimed formulas can be found.



Art Unit: 1711



The solvents for dissolving can be found in column 3, lines 50-60. Leyrer et al teaches adding an actinic, heat, redox and other chemical sensitizers in the solution. Said sensitizer is added to induce or accelerate the molecular

Art Unit: 1711

degradation of said PDA. Radiation sensitizers include compounds that are active in light have the wavelength about 180-800 nm. This appears to read on claim 24. The heat sensitizers should form free radicals at temperatures from about 40 to 200 OC. Oxygen is also disclosed as a sensitizer for the process, wherein in this system is effected by the exposure of actinic light having a wavelength from 250 to 320 nm. The radiation exposure can be obtained from sources, such as those found in column 6, wherein excimer lasers and UV lasers are disclosed.

It is set forth in the disclosure that the degraded PDA's can be processed directly from the solution--see column 7. These PDA's are disclosed as being useful in the production of positive working photodegradable resist layers and dry resist films. Per example, the degraded PDA's were coated onto glass substrates that have been surface treated with aluminum. This appear to read on applicant's instant claims 21-22, wherein the examiner deems the glass substrate is transparent and compatible with the PDA solution since Leyrer et al has obtained imaged resist layer.

Leyrer et al does not disclose the polydispersity or the average degree of polymerization, however it is deemed that Leyrer et al is deemed to anticipate the instantly claimed soluble 1,4-diacetylene polymer and appears to be obtained by the same method; and because the Patent and Trademark Office is not equipped to conduct experimentation in order to determine whether Applicant's PDA differs and, if so, to what extent, from the discussed reference. Therefore, with the showing of the reference, the burden of establishing non-obviousness by objective evidence is shifted to the Applicants.

### *Conclusion*

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L. McClendon whose telephone number is (571) 272-1074. The examiner can normally be reached on Monday through Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1711

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sanza L. McClendon

Examiner

Art Unit 1711

SMC